

Name_____

Chemistry I: Titration problems

Period_____ Date _____

Show set up for problems. Use your calculator to solve

1. Calculate the molarity of a monoprotic acid if exactly 50 ml neutralize 100 ml of 4.0 molar (4.0 M) solution of NaOH.

2. What is the molarity of a diprotic acid if 80 ml neutralize 60 ml of a 3.00 molar solution of KOH.

3. How many milliliters of a 0.4M solution of KOH are needed to neutralize 20 milliliters of a 0.01M triprotic acid?

4. If 28.4 ml of 1 M HCl are required to neutralize 10.0 ml of NaOH, what is the molarity of the NaOH solution?

5. If 21 ml of 0.10 M HCl are needed to neutralize 32 ml of LiOH solution, what is the molarity of the LiOH solution?

6. How many ml of 0.1 M acetic acid are needed to neutralize 400 ml of 0.2 M $\text{Ca}(\text{OH})_2$?

7. If 14 mL of 0.20 M HCl are needed to neutralize 20 ml of KOH solution, what is the molarity of the base?

8. If 48 mL of 0.15 M H_2SO_4 were used to neutralize 144 ml of $\text{Ba}(\text{OH})_2$ solution,
(a) Calculate the molarity of the base,

9. 100 mL of a 0.80 M NaOH solution neutralized exactly 100 mL of vinegar, which is a solution of water and acetic acid ($\text{HC}_2\text{H}_3\text{O}_2$). Calculate the molarity of the acid in the vinegar.

10. How many grams of $\text{Ba}(\text{OH})_2$ are needed to neutralize 300 mL of a 0.030 M H_3PO_4 solution?
11. What volume of 0.40 M H_3PO_4 would be required to neutralize 1.5 grams of NaOH?
12. In titration, 26.4 mL of 1.00 M HCl are required to neutralize 10.0 mL household ammonia (NH_4OH). What is the molarity of the household ammonia?
13. What volume of 2.549 M NaOH is needed to fully titrate 50.0 mL of 1.285 M HCl solution?
14. What volume of 1.146 M KOH is needed to fully titrate 20.8 mL of 0.557 M H_2SO_4 solution? (Sulfuric acid is diprotic)
15. A burette filled with 1.52 M sodium hydroxide solution reads 2.10 mL initially. After titrating a 25.00 mL sample of acetic acid the endpoint was reached and the burette now showed 46.30 mL. What is the molarity of the acetic acid?
16. A burette filled with 2.557 M sodium hydroxide solution reads 15.62 mL initially. After titrating a 25.00 mL sample of phosphoric acid the endpoint was reached and the burette now showed 39.22 mL. What is the molarity of the H_3PO_4 ?